

Long Branch Lake 2000 Water Quality Report

1. General.

- a. **Project location.** Long Branch Dam is located at approximately river mile 68 on the East Fork of the Little Chariton River, 1 mile west of Macon, Missouri. The Long Branch arm of the Y-shaped reservoir parallels the East Fork arm. The drainage area of the stream above the dam is 109 square miles.
- b. **Authorized project purposes.** Flood control, water supply, and water quality control are the primary project purposes; equally important, however, are its fish and wildlife resources and recreation benefits. A State Park with marina and swimming beach is located near the dam.
- c. **Pertinent data.**

Pools	Surface Elevation (ft. above m.s.l.)	Current Capacity (1,000 A.F.)	Surface Area (acres)	Shoreline (miles)
Flood Control	801.0	30.3	3,670	
Multipurpose	791.0	34.2	2,430	24
Inactive		3.5*		
Total		64.5		

Total Drainage Area: 109 sq. miles

Average Annual Inflow: 81,780 acre-feet

* Contained in multipurpose pool.

2. Activities and studies of the year.

Monthly herbicide and nutrient sampling was conducted by lake project personnel, with technical and analytical support from PM-PR-W, April-September 2000 at two inflow stations, three lake stations (two depths), and the outlet. Nutrient samples were shipped to the Chemical and Materials Quality Assurance Laboratory (CMQAL) in Omaha for analysis while the herbicide samples were shipped to the PM-PR-W laboratory for analysis of four of the most commonly occurring herbicides by the enzyme linked immunosorbent assay (ELISA) method. Ten percent of the herbicide samples were shipped to the CMQAL to be analyzed by Gas Chromatography (GC) for quality control purposes. All generated data were entered in Excel spreadsheets as an interim to the EPA national water quality data management system, NEW

STORET, which is to be readily available to us later this year. Table 1 at the end of this report includes all the available nutrient and herbicide data for the years 1995-2000.

The OF-LB is to be commended for its continued support of water quality monitoring of Long Branch Lake and its tributaries. The OF-LB personnel deserving special recognition include Messrs. Mike Monda, Don Goers, and Paul Sampson.

3. Existing conditions.

a. **Inflow.** During the period of record, the total ammonia (NH_3) concentrations in Long Branch have frequently exceeded the Missouri chronic criterion for a warm water fishery. It is quite probable that these levels reflected the impact of the discharges from the Atlanta, Missouri, waste treatment plant. Mean and maximum total NH_3 concentrations were 0.95 mg/L and 2.00 mg/L, respectively. Total Kjeldahl nitrogen (TKN) continued to be within a hypereutrophic range in 2000 with mean and maximum concentrations of 2.62 mg/L and 4.00 mg/L, respectively. The nitrite/nitrate (NO_2/NO_3) levels were generally lower with mean and maximum concentrations of 0.44 mg/L and 1.00 mg/L, respectively. The calculated total nitrogen

(NH_3 , NO_2 ,

NO_3 , and

TKN)

concentrations

for April-

September

were 2.79

mg/L, 4.01

mg/L, 6.71

mg/L, 3.92

mg/L, 2.51

mg/L, and

4.20 mg/L,

respectively.

Over the

entire period

of record,

observed TN

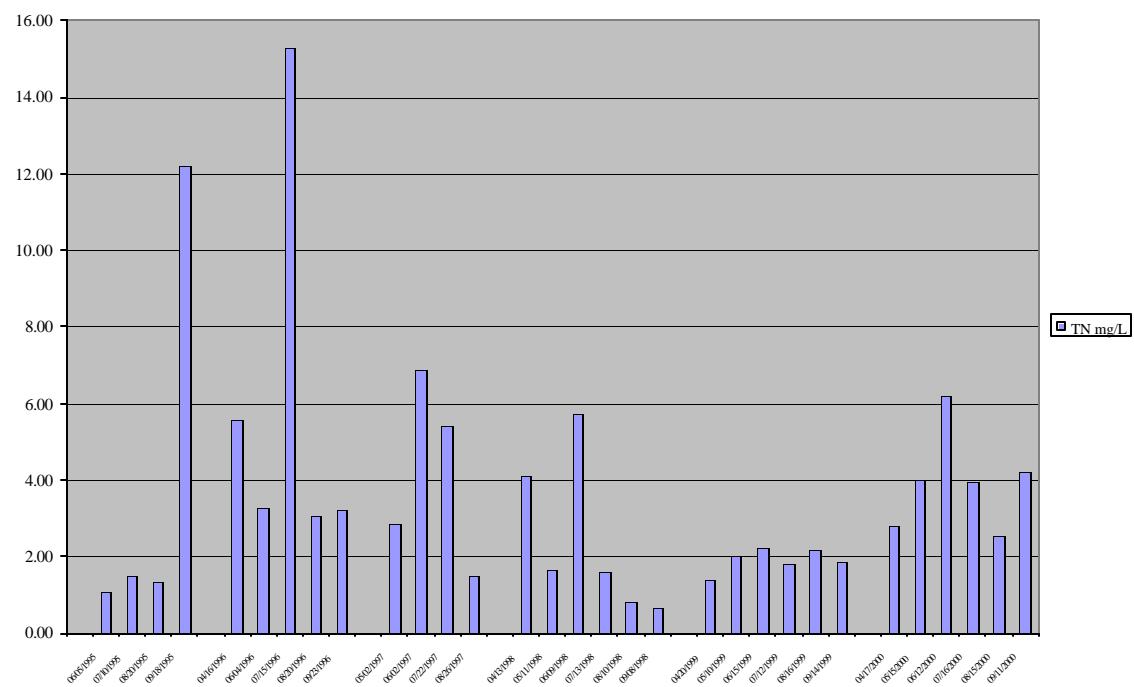
concentrations

have usually

been

eutrophic and occasionally hypereutrophic, indicating excessive nutrient loading to the small stream. Figure 1 shows this trend over the past six years.

FIGURE 1: LB-18



The 2000 total phosphorus (TP) concentrations (mean and maximum of 0.39 mg/L and 0.55 mg/L, respectively) in Long Branch continued to exceed the generalized stream eutrophy

criterion of 0.10 mg/L. Historically, maximum observed TP concentrations generally have been within the hypereutrophic range, and minimum values have usually exceeded the criterion for the protection of aquatic ecosystems from excessive eutrophication. Figure 2 shows the trend for the past six years.

The high spikes occur during periods of high inflow.

Four herbicides (atrazine, cyanazine, alachlor, and metolachlor) were again detected in Long Branch. During the August survey period, the atrazine concentration exceeded the criterion for the drinking water supply MCL of 3 ug/L. Sixty-seven % of the samples exceeded the criterion for protection of aquatic life (1 ug/L). The mean and maximum atrazine concentrations in 2000 were 2.16 ug/L and 8.60 ug/L, respectively. The highest value was present in August. Atrazine has

FIGURE 2: LB-18

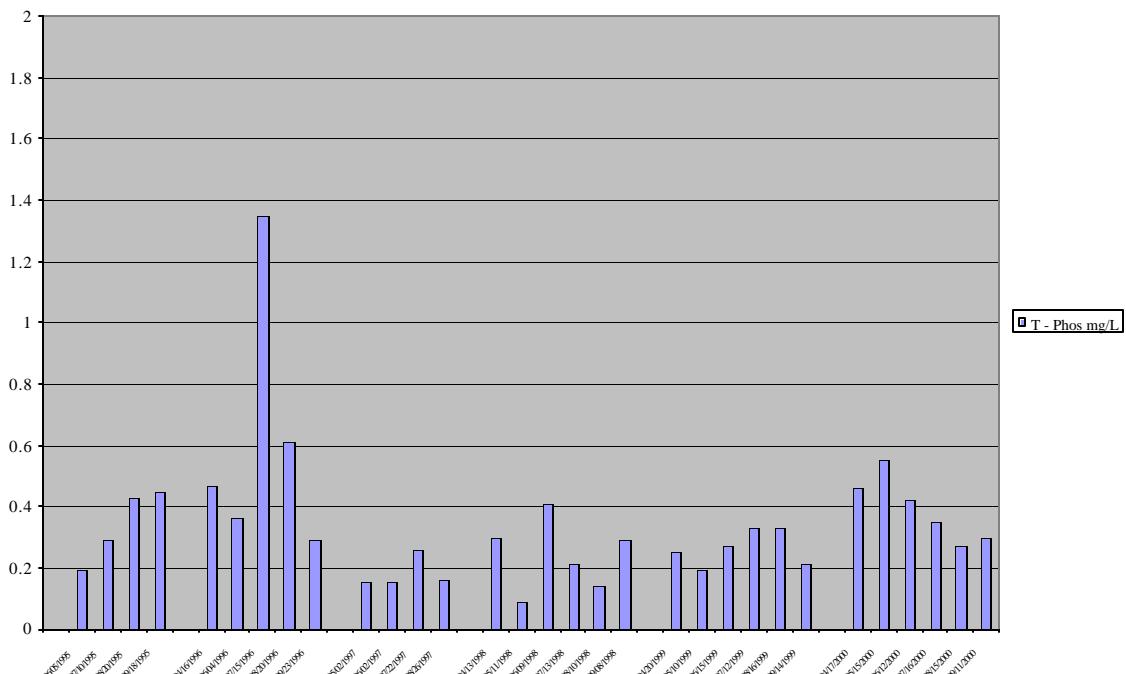
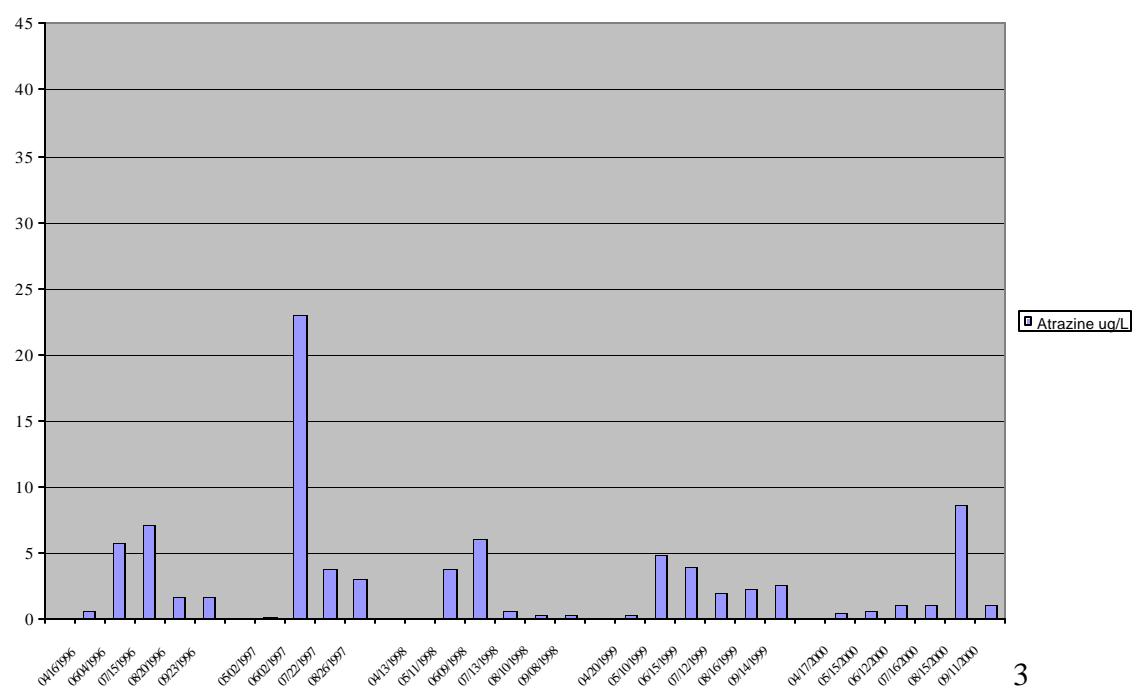


FIGURE 3: LB-18

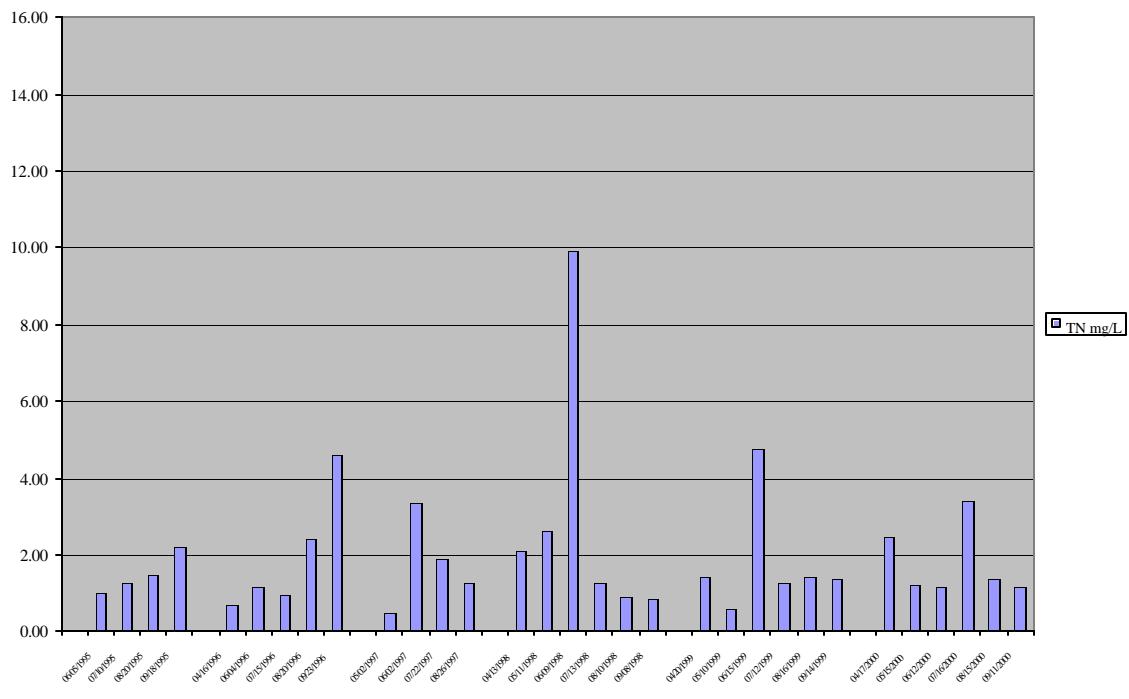


been frequently observed to exceed both criteria over the period of record. And, since conventional treatment processes do not remove herbicides, activated carbon filtration is required for the water to be suitable for a drinking water supply. Figure 3 shows the trend for atrazine over the past five years. The cyanazine mean and maximum concentrations were 0.29 ug/L and 1.07 ug/L, respectively, in 2000. The EPA has not set a MCL for cyanazine, but the suggested concentration or the maximum contaminant level goal (MCLG) is 1 ug/L. And, while the mean annual concentration in the small stream did not exceed this level, the criterion has frequently been exceeded over the period of record. The 2000 mean and maximum alachlor concentrations were 0.22 ug/L and 0.59 ug/L, respectively. None of the samples exceeded the 2 ug/L MCL. However, alachlor concentrations over the period of record have frequently exceeded the drinking water criterion. Metolachlor mean and maximum concentrations were 1.37 ug/L and 3.79 ug/L, respectively. To date no MCL has been established for this herbicide. These and past data clearly show the heavy pesticide loading to the stream during post-application, spring and early summer, storm run-off events.

Fecal coliform analyses were not performed in 2000; however, bacterial densities in past surveys have frequently been at levels several times the State criterion of a log mean not to exceed 2,000 colonies/100 mL. The proximity of the waste treatment plant and the livestock operations in the watershed suggest the bacterial densities are attributable to point and non-point source run-off. For the period of record, the log mean for fecal coliform is 1,600 colonies/100 mL.

Nitrogen forms in the East Fork were lower in comparison to those in Long Branch in 2000. The mean and maximum concentrations were as follows: NH₃, 0.36 mg/L and 1.23 mg/L; TKN, 1.36 mg/L and 2.10 mg/L; and NO₂/NO₃, 0.18 mg/L and 0.24 mg/L, respectively. Calculated total nitrogen concentrations for the April-September survey periods were 2.49 mg/L, 1.24 mg/L, 1.15 mg/L, 3.40 mg/L, 1.38 mg/L, and 1.18 mg/L,

FIGURE 4: LB-19



respectively. The July level reflected excessive nutrient loading associated with storm run-off. The stream eutrophy criterion of 0.1 mg/L TP was exceeded during four of the 2000 survey periods. Mean and maximum TP concentrations were 0.21 mg/L and 0.42 mg/L, respectively. Period of record data continue to show the heavy, long-term nutrient loading to the small stream. This can be seen in figures 4 and 5, which show this trend for the past six years.

A scan of pesticides and other toxicants detected four herbicides (atrazine, cyanazine, alachlor, and metolachlor) in the East Fork during 2000. Atrazine concentrations exceeded the aquatic life protection

FIGURE 5: LB-19

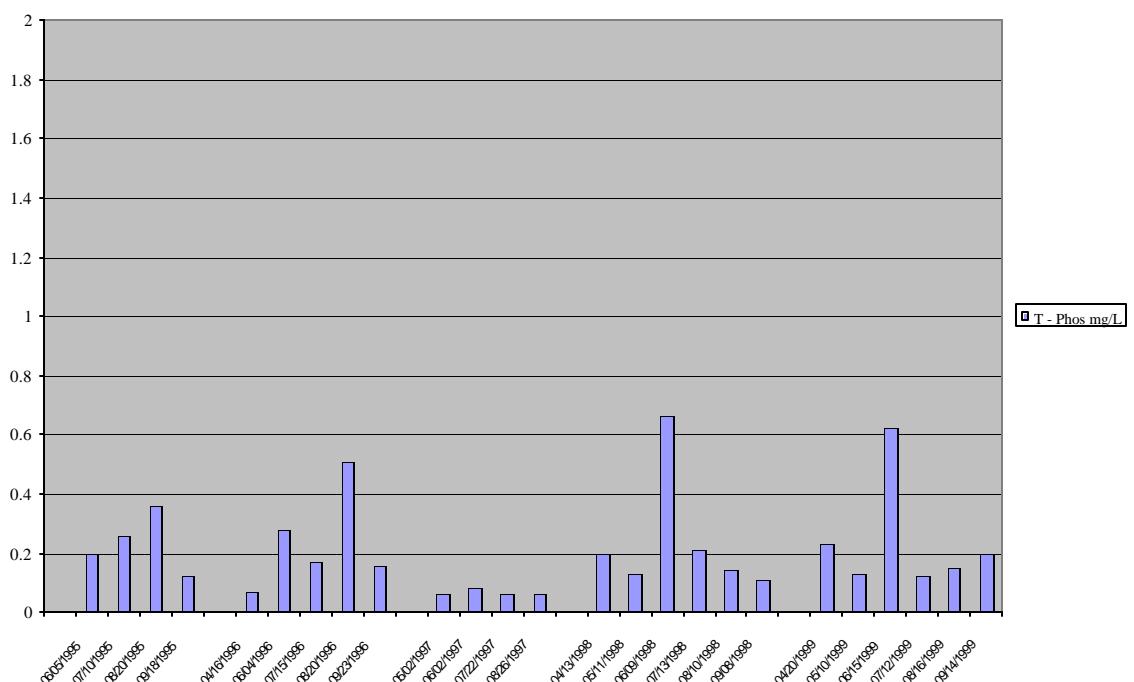
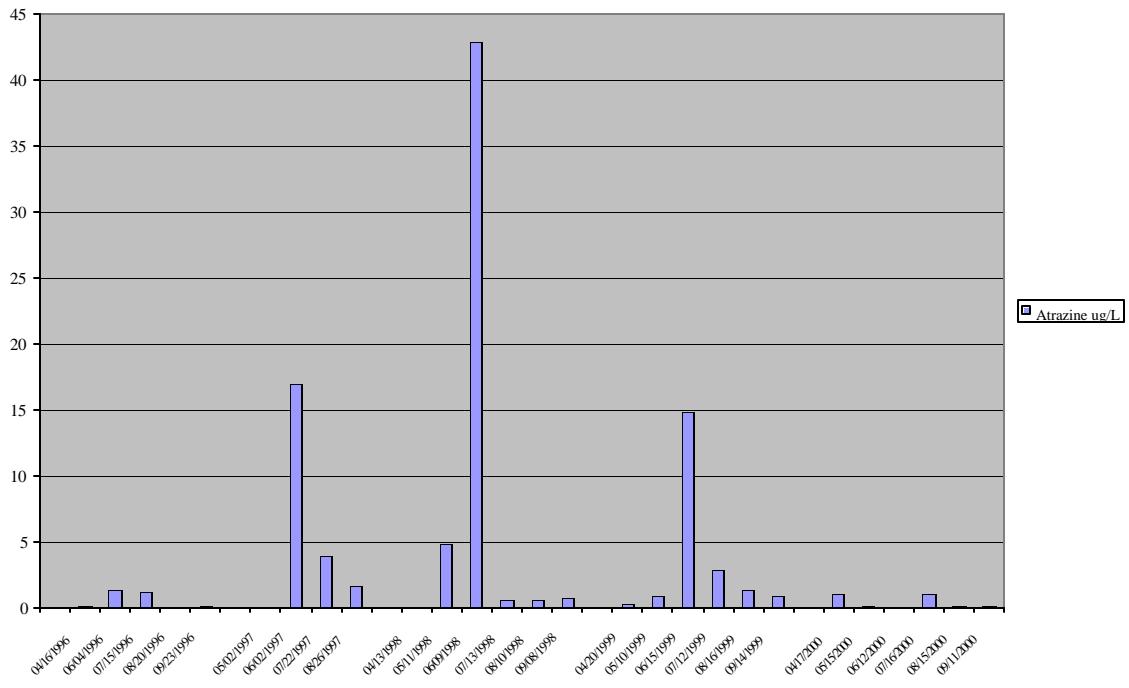


FIGURE 6: LB-19

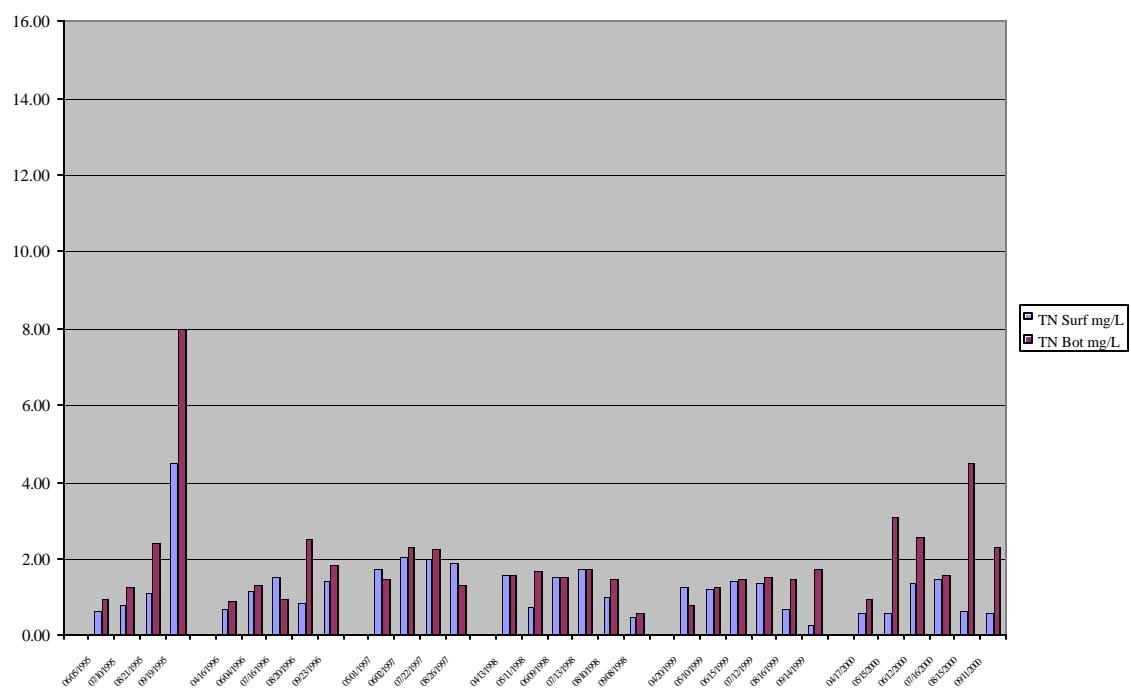


criterion (1 ug/L) in April and July but none of the samples exceeded the MCL for drinking water supply (3 ug/L). The 2000 mean and maximum atrazine concentrations (0.47 ug/L and 1.07 ug/L, respectively) are not typical of the period of record atrazine data, which show an almost continuous exceedence of the EPA criteria. This can probably be attributed to the near drought conditions during the sampling season. Figure 6 shows the trend for atrazine over the past five years. The mean and maximum concentrations of cyanazine were 0.08 ug/L and 0.11 ug/L, respectively. None of the samples exceeded the MCLG of 1 ug/L, however, the exceedence of this criterion has been frequently observed over the period of record. The mean (0.10 ug/L) and maximum (0.16 ug/L) concentrations of alachlor were typical for the small stream. The final herbicide, metolachlor, had mean and maximum concentrations of 0.25 ug/L and 0.54 ug/L, respectively. As noted previously, no MCL has been established for it.

b. **Lake.** Nutrient levels in the reservoir have historically been elevated as a result of the significant erosional contribution of the inflows. The uplake portion of the East Fork arm typically exhibits the highest nutrient concentrations presumably because of the greater nutrient loading from its larger drainage area. The lowest nutrient concentrations are present in the downlake area, as a result of uptake or sedimentation in the uplake areas. And, from a depth standpoint, bottom concentrations throughout the reservoir are substantially higher than surface concentrations, but, as a result of summer stratification, are not available for uptake by the algal populations residing in the upper strata or epilimnion. Once stratification is broken down in September, the potential for greater utilization of available nutrients is increased, which can result in taste

and odor
problems in
the fall
drinking
water
supplies.
Figures 7, 8,
and 9 show
the
relationship
between
surface and
bottom total
nitrogen
concentrations
for the past
six years
throughout
the lake. The
high spikes
can be
attributed to
high inflows and temperature differences between surface and bottom waters. High bottom

FIGURE 7: LB-4



concentrations could also be attributed to high concentrations of sediment in the samples.

The 2000 total nitrogen concentrations in the surface waters of the Long Branch arm (mean 1.17 mg/L and maximum 1.71 mg/L) and East Fork arm (mean 1.38 mg/L and maximum 2.16 mg/L) were indicative of the highly enriched nature of the impoundment over the period of record. The down lake area with mean and maximum TN concentrations of 0.89 mg/L and 1.47 mg/L, respectively, exhibited only slightly lower nutrient

FIGURE 8: LB-10

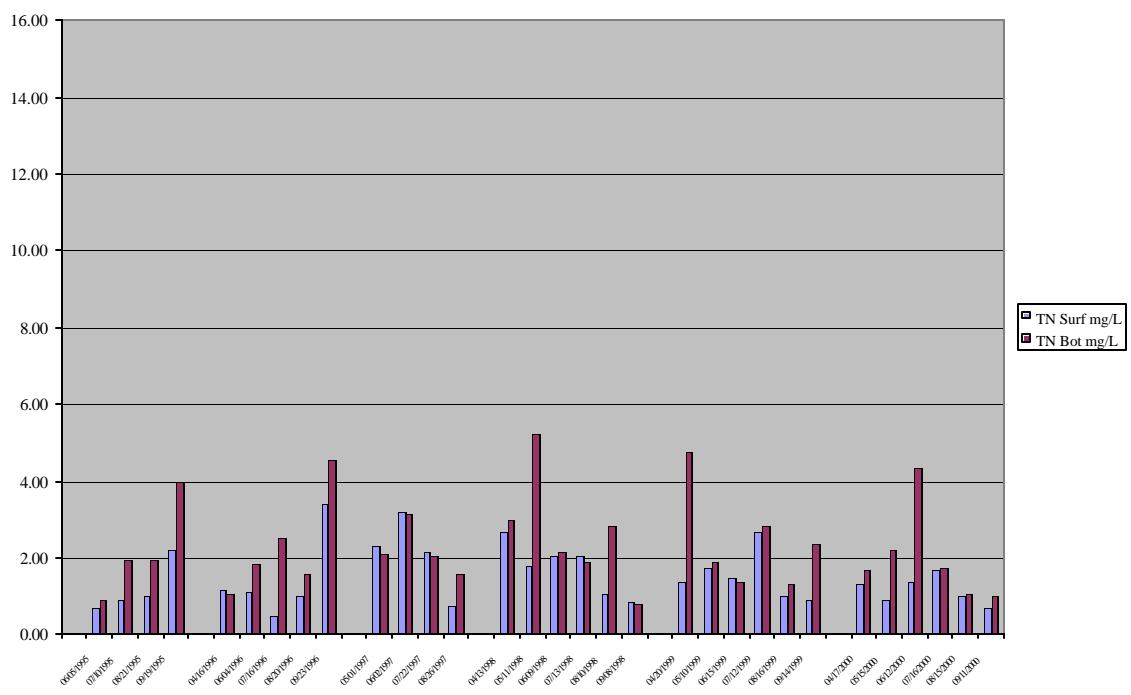
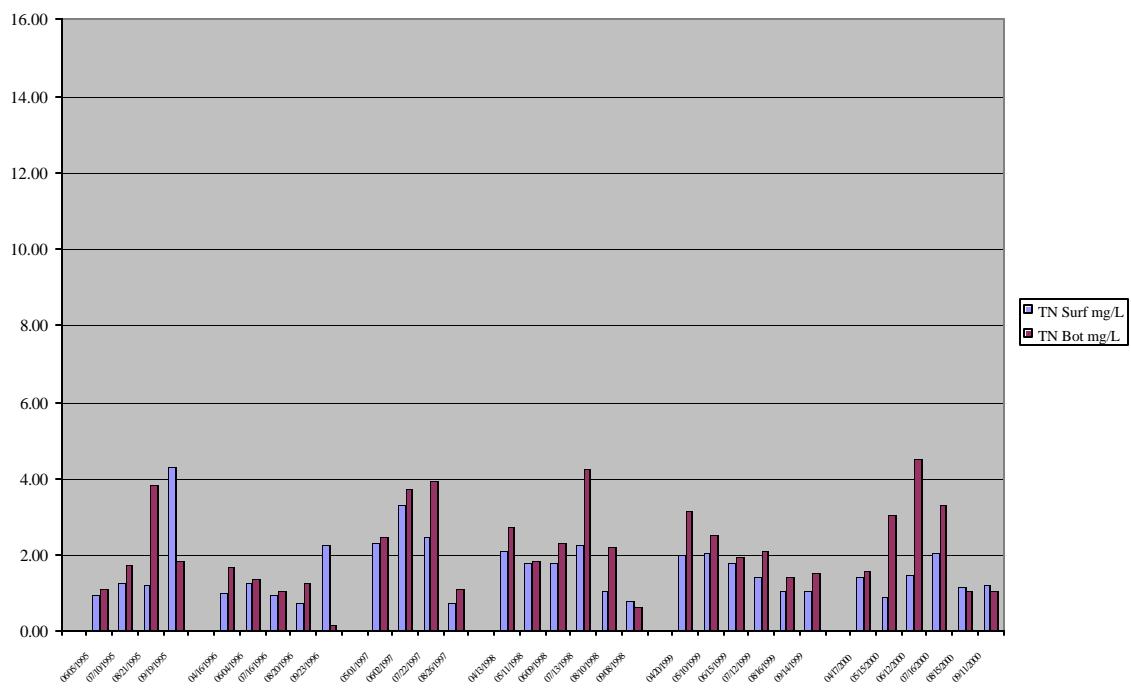


FIGURE 9: LB-11



levels. Values in the bottom waters were consistently higher than those of the surface waters with mean and maximum concentrations of 2.02 mg/L and 4.38 mg/L, respectively, at LB-10, 2.43 mg/L and 4.53 mg/L, respectively, at LB-11, and at LB-4, 2.49 mg/L and 4.48 mg/L, respectively.

Total phosphorus concentrations throughout the reservoir exceeded the 0.05 mg/L eutrophy criterion in 89% of the 2000 survey periods. The mean and maximum TP concentrations in the surface waters were Long Branch, 0.13 mg/L and 0.18 mg/L; East Fork,

FIGURE 10: LB-4 Lake

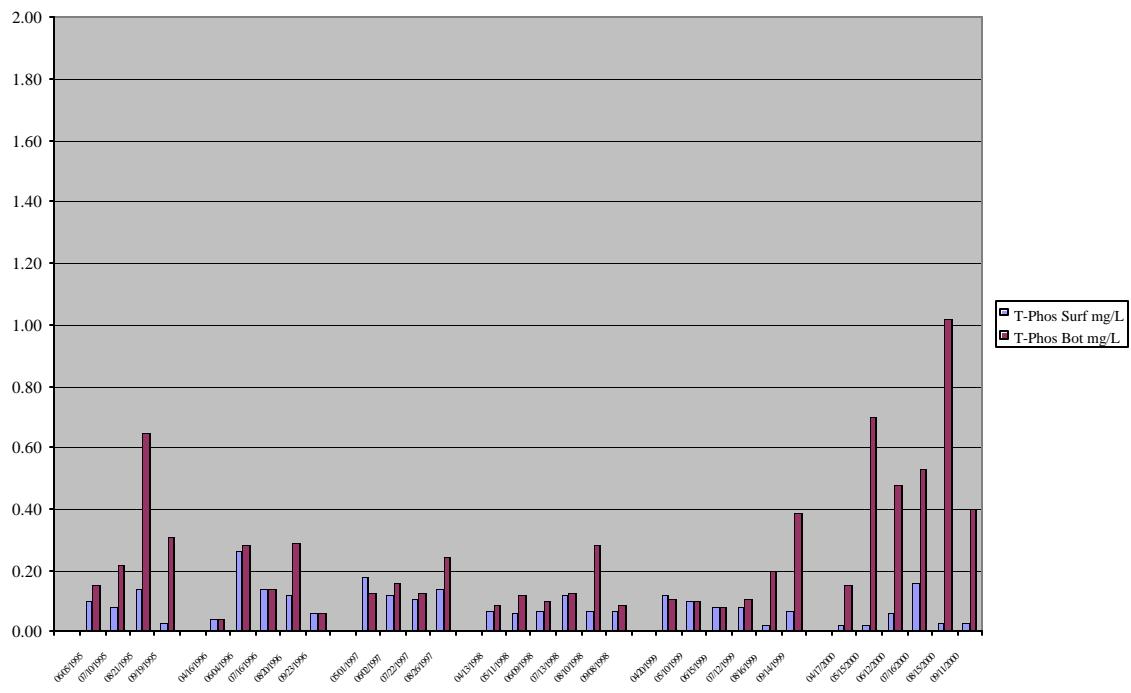
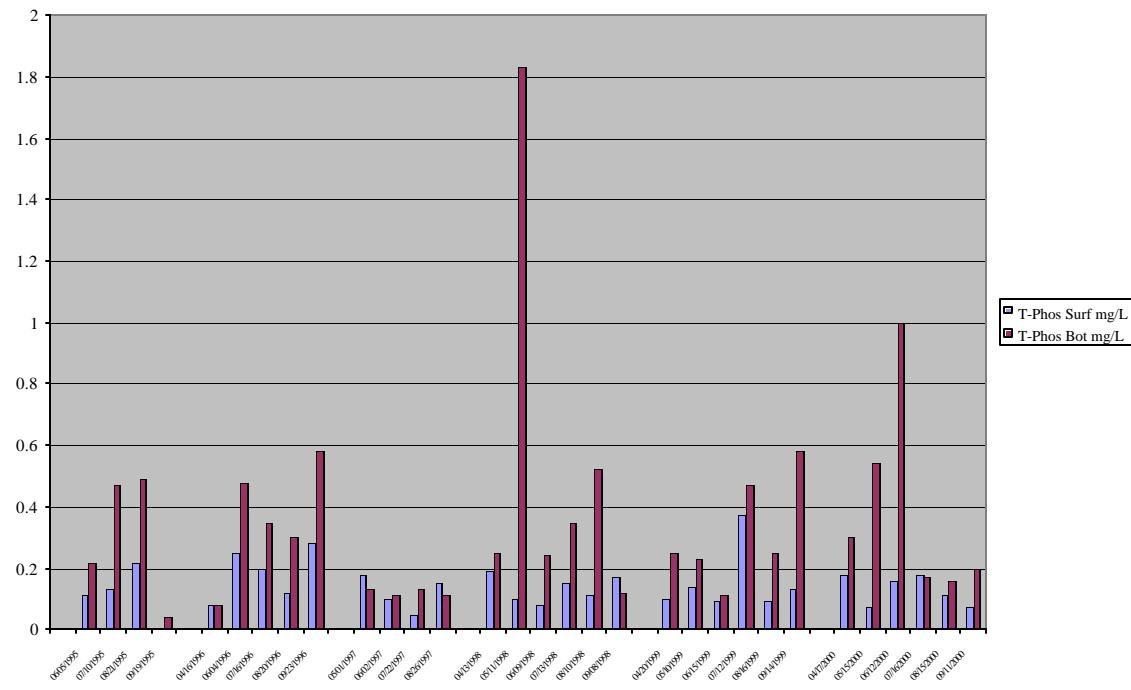


FIGURE 11: LB-10



0.16 mg/L and 0.21 mg/L; and downlake, 0.05 mg/L and 0.16 mg/L, respectively. The mean and maximum TP concentrations in the bottom waters were Long Branch, 0.40 mg/L and 1.00 mg/L; East Fork, 0.51 mg/L and 1.00 mg/L; and downlake 0.55 mg/L and 1.02 mg/L. Figures 10, 11, and 12 show total phosphorus concentrations at the surface and bottom depths throughout the lake from 1995-2000. The total phosphorus concentrations tend to follow the same pattern as the total nitrogen concentrations.

Four herbicides (atrazine, cyanazine, alachlor, and metolachlor) were detected during the 2000 surveys. A test for acetochlor was also conducted but the herbicide was not detected. Atrazine

FIGURE 12: LB-11

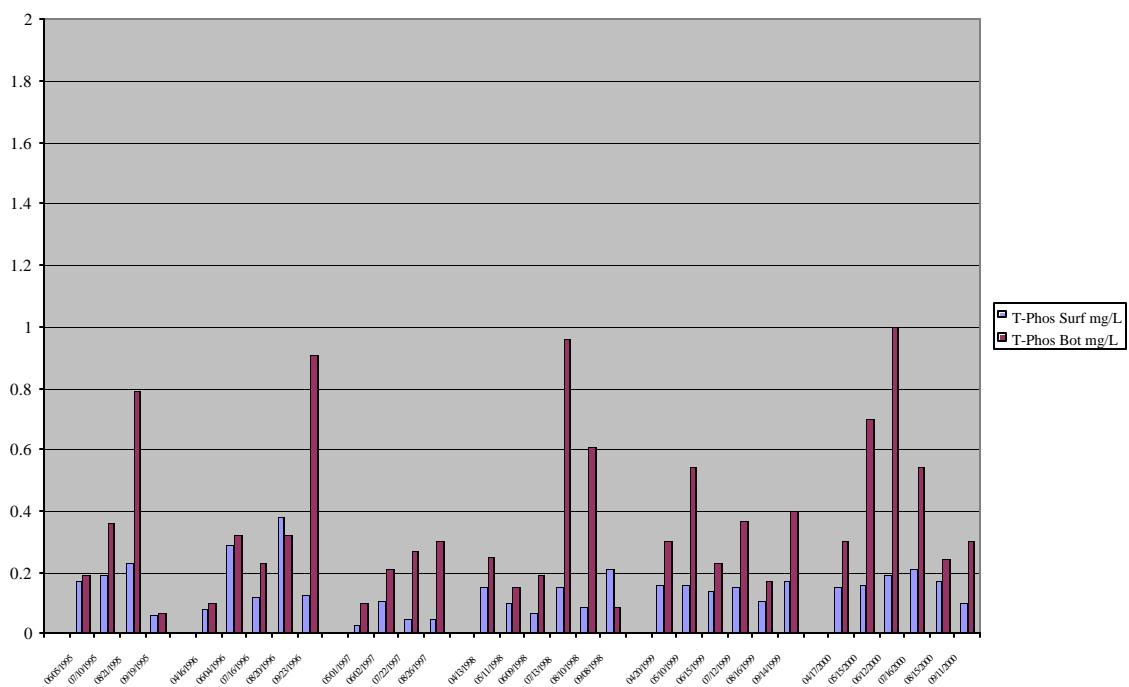
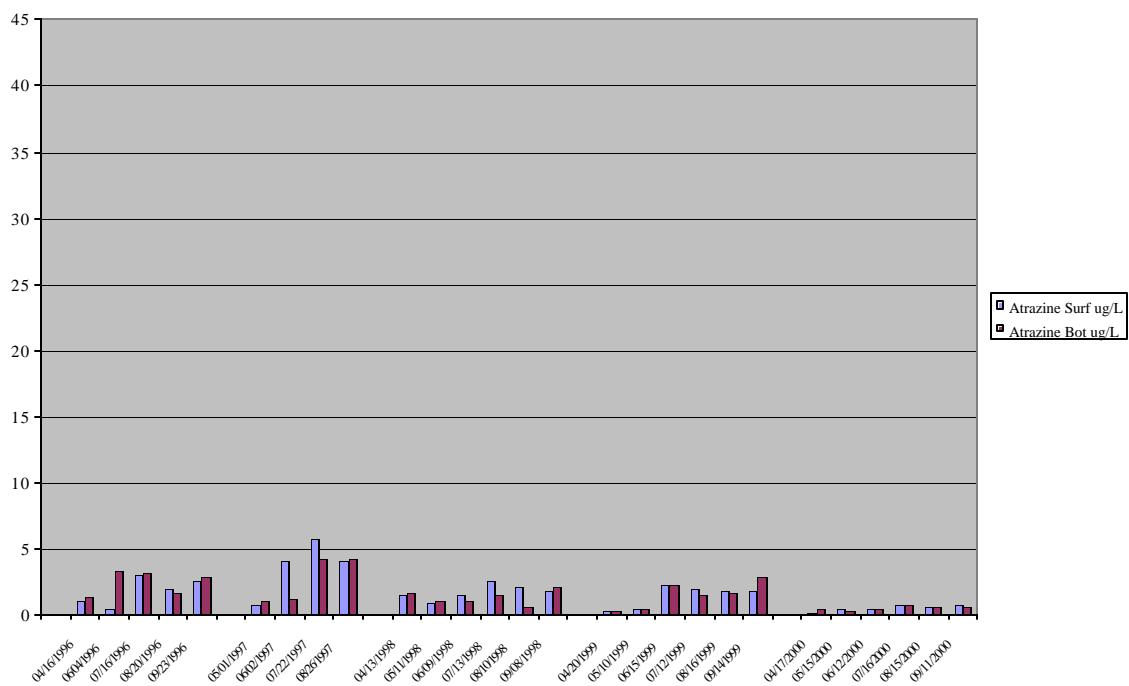


FIGURE 13: LB-4



concentrations in the upper portions of the impoundment did not exceed the MCL of 3 ug/L for drinking water supplies. Concentrations throughout the lake were lower due to near drought conditions during the sampling season. The mean and maximum atrazine concentrations in the surface waters were as follows, East Fork arm, 0.58 ug/L and 0.79 ug/L; Long Branch arm, 0.63 ug/L and 0.91 ug/L; and downlake, 0.56 ug/L and 0.77 ug/L, respectively.

Bottom mean and maximum concentrations were about the same as in surface waters, East Fork arm, 0.63 ug/L and 1.06 ug/L; Long Branch arm, 0.61 ug/L and 0.87 ug/L; and downlake, 0.55 ug/L and 0.75 ug/L, respectively.

Figures 13, 14, and 15 show the trend for atrazine for the years 1996-2000. As can be seen from these graphs, higher concentrations occur within the lake during early spring run-off periods.

FIGURE 14: LB-10

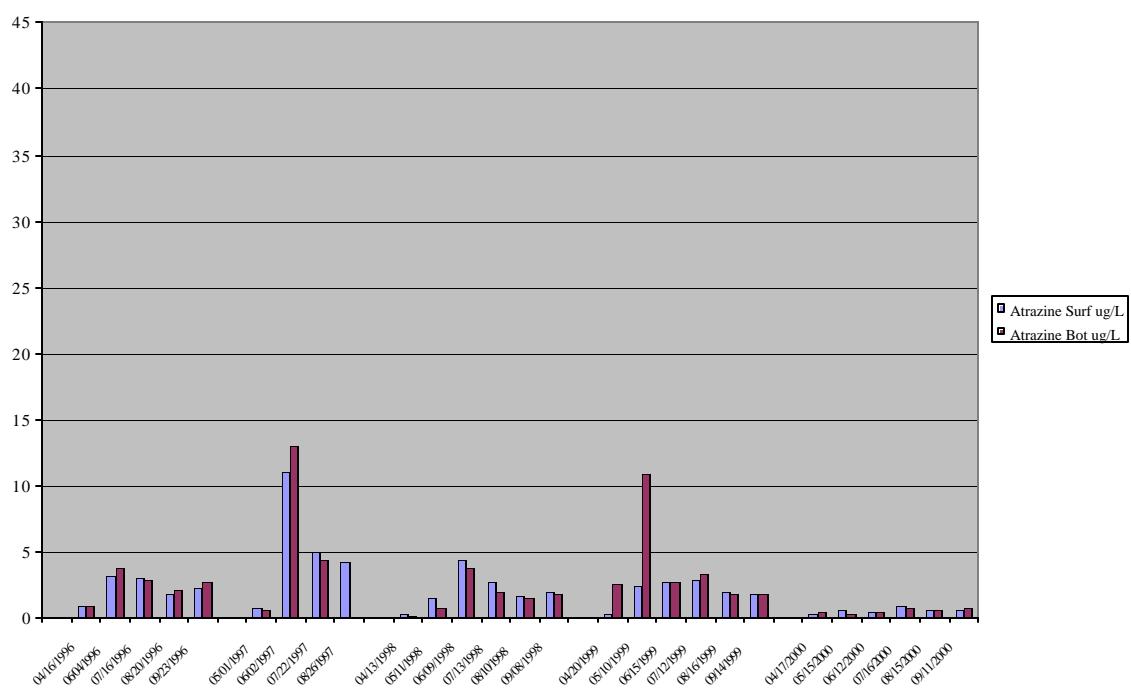
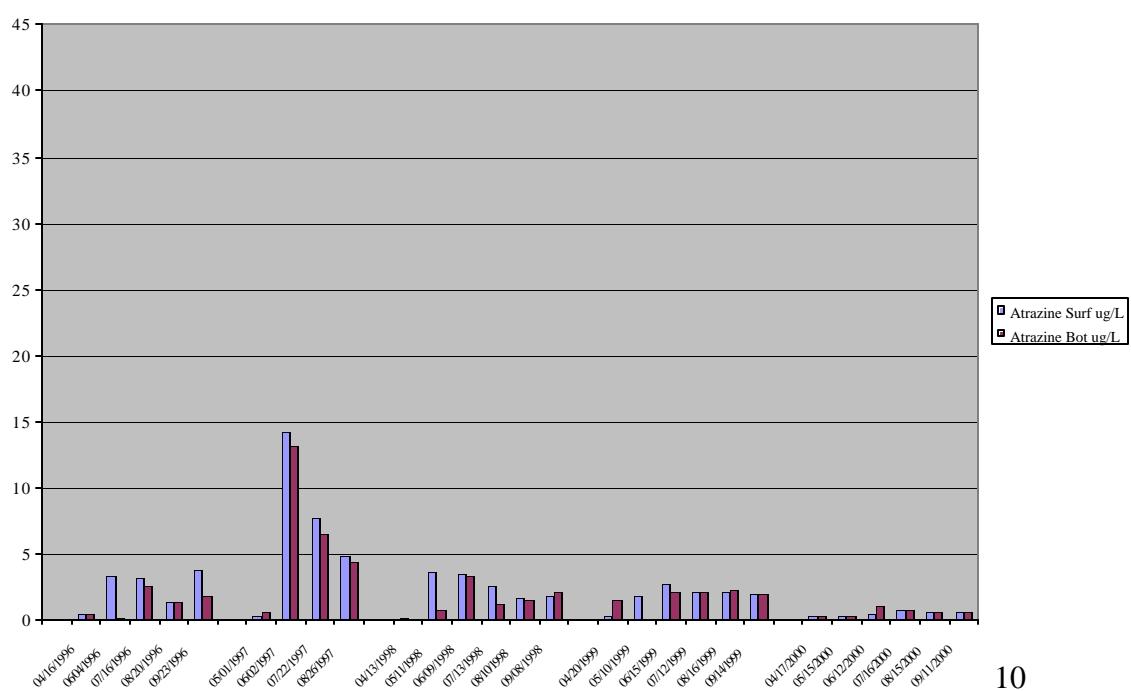


FIGURE 15: LB-11

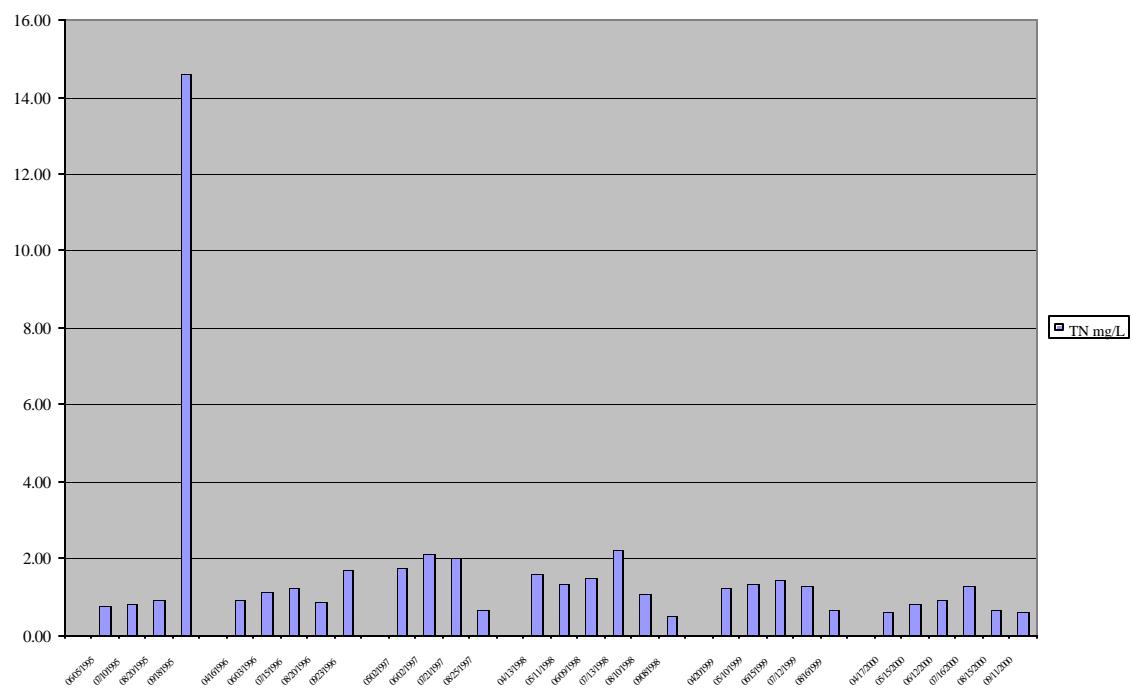


Again, the high spikes can be attributed to these high flow seasons and temperature differences within the water column. Cyanazine concentrations did not exceed the MCLG of 1 ug/L in any of the 2000 samples. The mean and maximum cyanazine concentrations in the surface waters were as follows, East Fork, 0.09 ug/L and 0.10 ug/L; Long Branch, 0.12 ug/L and 0.19 ug/L; and down lake, 0.09 ug/L and 0.11 ug/L, respectively. No alachlor samples exceeded the MCL of 2 ug/L. Mean and maximum concentrations of alachlor in the surface waters were East Fork, 0.08 ug/L and 0.11 ug/L, Long Branch, 0.10 ug/L and 0.11 ug/L, and downlake 0.09 ug/L and 0.09 ug/L, respectively. Metolachlor mean and maximum concentrations in the surface waters were East Fork, 0.16 ug/L and 0.26 ug/L; Long Branch, 0.18 ug/L and 0.27 ug/L; and downlake, 0.18 ug/L and 0.29 ug/L, respectively. Since no MCL has been established for metolachlor, the significance of the concentrations in the reservoir can not be determined. Nevertheless, the period of record data indicate the MCLs for atrazine, cyanazine, and alachlor have been frequently exceeded. The reservoir acts as a pesticide sink receiving very high pesticide loading during the post-application, storm run-off events and slowly discharging the diluted concentrations over the remainder of the water year. And, as noted previously, since conventional water treatment does not remove herbicides, the water must receive additional treatment in the form of activated carbon filtration to meet established water supply criteria.

c. **Outflow.** Total nitrogen and total phosphorus concentrations continued to be in a lower eutrophic range in the outlet than in the inflow streams indicating substantial uptake of nutrients and

sedimentation
within the
impoundment.
The stream
eutrophy
criterion of 1
mg/L TN was,
however,
exceeded in
the month of
July. Total
nitrogen
mean,
minimum, and
maximum
concentrations
in the outlet
were 0.81
mg/L, 0.60
mg/L, and
1.29 mg/L,

FIGURE 16: LB-3



respectively. The generalized stream eutrophy criterion for total phosphorus (0.1 mg/L) was exceeded in June and July. Total phosphorus mean, minimum, and maximum concentrations

were 0.06 mg/L, 0.03 mg/L, and 0.13 mg/L, respectively. Figures 16 and 17 show the trend for the past six years. Again, the high spikes are due to high flow conditions.

The four herbicides (atrazine, cyanazine, alachlor, and metolachlor) present throughout the system were also detected in reduced amounts in the outlet samples. There was no exceedance of established criteria during the 2000 surveys. Atrazine mean and maximum concentrations were 0.56 ug/L and 0.80 ug/L, respectively.

Figure 18 shows the trend for 1996-2000. The mean and maximum concentrations of cyanazine were 0.09 ug/L and 0.14 ug/L, respectively. Alachlor was detected in only one sample with a

FIGURE 17: LB-3

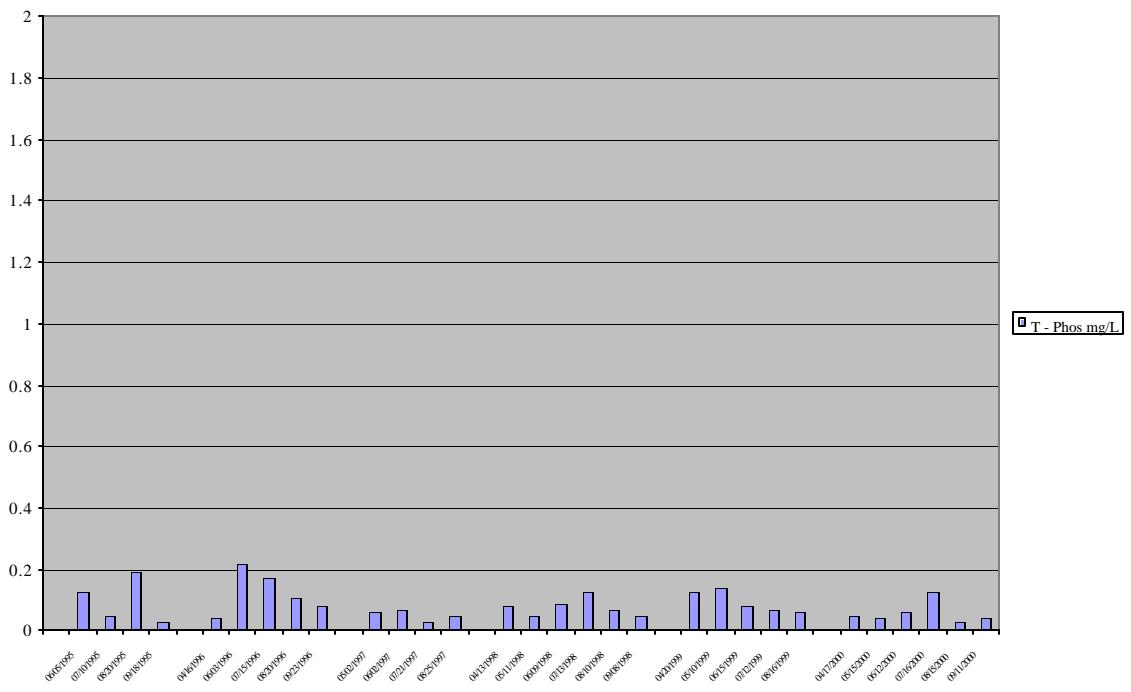
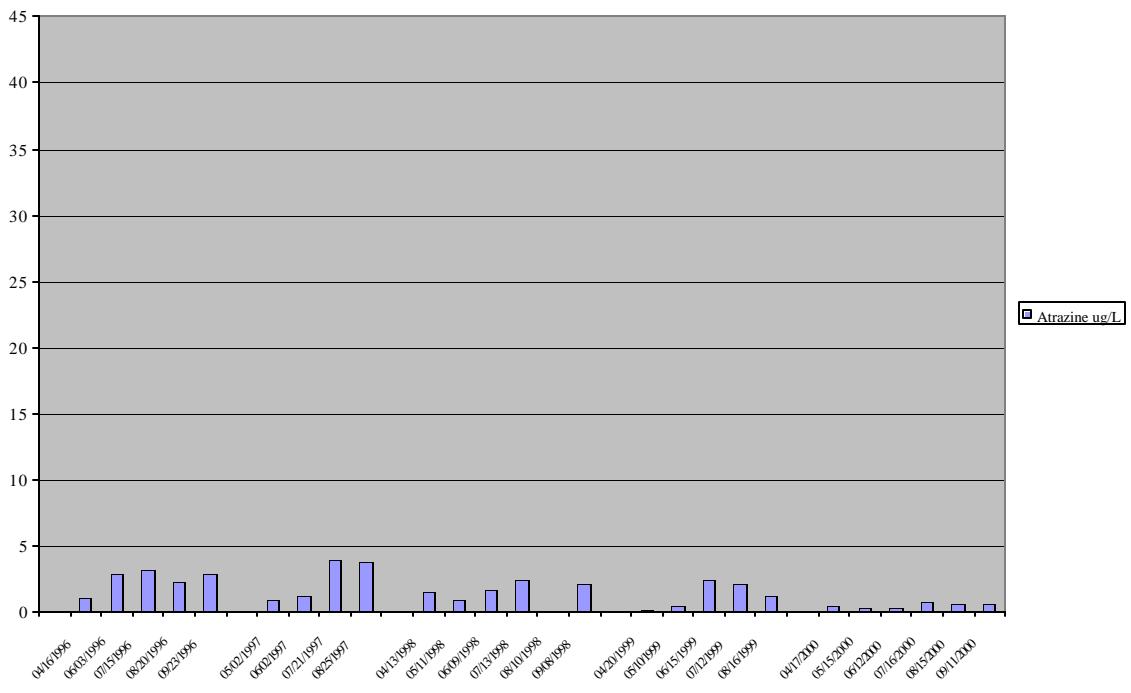


FIGURE 18: LB-3



concentration of 0.14 ug/L. Metolachlor concentrations in the reservoir discharge were also low with mean and maximum concentrations of 0.14 ug/L and 0.20 ug/L, respectively. As noted previously, the water quality concern associated with these concentrations can not be determined since no MCL has been established for metolachlor.

4. Future conditions .

The general water quality of Long Branch Lake is only moderately good. The main problems in the dimictic reservoir are turbidity, significant suspended solids and nutrient loading, high iron and manganese levels, and hypolimnetic oxygen depletion during the summer. Pesticide loading may, however, prove to be the most significant factor in the reservoir's ecosystem and water supply benefits. If land use practices within the watershed do not change, (i.e., agricultural practices do not include reductions in soil erosion and in herbicide and fertilizer usage), the reservoir could potentially reach a point at which it is unable to assimilate the increased loading of silt, nutrients, and pesticides. The water supply, recreation, and sport fishery benefits would then be severely impaired or lost.

5. Recommendations .

Because of the continued support of OF-LB, the cooperative water quality monitoring program should be funded for 2001. The investigations should include monthly nutrient and pesticide analyses from April-September. The District should continue to support efforts in developing a multi-agency watershed monitoring and pollution reduction program for Long Branch Lake in 2002.

TABLE 1: LONGBRANCH LAKE DATA 1995-2000

Station	Depth (M)	Date mm/dd/yyyy	Time hhmm	Atrazine ug/L	Alachlor ug/L	Metolachlor ug/L	Cyanazine ug/L	Acetochlor ug/L	Ammonia mg/L	NO3/NO2 mg/L	TKN mg/L	TN mg/L	T - Phos mg/L	T - Ortho-F mg/L
LB-3	0.1	06/05/1995	0830						0.16		0.60	0.76	0.13	0.08
	0.1	07/10/1995	0800						0.02		0.80	0.82	0.05	<0.01
	0.1	08/20/1995	1445						<0.02		0.90	0.90	0.19	0.01
	0.1	09/18/1995	1650						<0.02		14.60	14.60	0.03	<0.01
	Average								0.09		4.23	4.27	0.10	0.05
LB-3	0.1	04/16/1996	1300	1.09	0.28	0.08	0.96		<0.02	0.22	0.70	0.92	0.04	0.01
	0.1	06/03/1996	1600	2.88	0.36	1.18	2.81		0.25	0.30	0.60	1.15	0.22	0.04
	0.1	07/15/1996	1420	3.17	0.19	1.02	2.75		0.07	0.48	0.70	1.25	0.17	0.01
	0.1	08/20/1996	0750	2.27	0.13	0.52	2.28		<0.02	0.14	0.70	0.84	0.11	<0.01
	0.1	09/23/1996	0700	2.95	0.14	0.69	2.17		0.10	0.12	1.50	1.72	0.08	0.03
	Average			2.47	0.22	0.70	2.19		0.14	0.25	0.84	1.18	0.12	0.02
LB-3	0.1	05/02/1997	1215	0.98	0.10	0.08	0.97		0.09	0.76	0.90	1.75	0.06	
	0.1	06/02/1997	0910	1.28	0.07	0.28	1.01		0.32	0.80	1.00	2.12	0.07	0.03
	0.1	07/21/1997	1445	4.06	0.33	1.49	2.50		0.07	0.73	1.20	2.00	0.03	0.02
	0.1	08/25/1997	1530	3.83	0.15	0.85	2.14		<0.02	0.08	0.60	0.68	0.05	0.02
	Average			2.54	0.16	0.68	1.66		0.16	0.59	0.93	1.64	0.05	0.02
LB-3	0.1	04/13/1998	1120	1.62	<0.05	0.22	0.97		0.06	0.52	1.00	1.58	0.08	0.04
	0.1	05/11/1998	1130	0.88	0.08	0.15	0.49		0.02	0.62	0.70	1.34	0.05	0.01
	0.1	06/09/1998	0735	1.67	0.06	0.48	0.73		0.11	0.70	0.70	1.51	0.09	0.06
	0.1	07/13/1998	0730	2.45	0.27	0.77	1.11		0.35	0.65	1.20	2.20	0.13	0.03
	0.1	08/10/1998	0835						<0.02	0.27	0.80	1.07	0.07	0.04
	0.1	09/08/1998	0745	2.16	0.11	0.38	0.80		0.04	0.05	0.40	0.49	0.05	0.03
	Average			1.76	0.13	0.40	0.82		0.12	0.47	0.80	1.37	0.08	0.04
LB-3	0.1	04/20/1999	1150	0.25	<0.05	<0.05	0.09		U	0.78	0.46	1.24	0.13	0.06
	0.1	05/10/1999	0800	0.54	<0.05	0.25	0.09		U	0.90	0.42	1.32	0.14	0.04
	0.1	06/15/1999	0715	2.45	0.06	0.81	0.16		U	0.78	0.67	1.45	0.08	0.04
	0.1	07/12/1999	0845	2.11	0.06	0.80	0.16		U	0.61	0.65	1.26	0.07	0.02
	0.1	08/16/1999	0715	1.20	<0.05	0.56	0.10		U	0.18	0.46	0.64	0.06	0.02
	Average			1.31	0.06	0.61	0.12		0.65	0.53	1.18	0.10	0.04	
LB-3	0.1	04/17/2000	1005	0.43	<0.05	<0.05	<0.04		0.04	U	0.57	0.61	0.05	0.02
	0.1	05/15/2000	0730	0.38	<0.05	0.18	<0.04		U	U	0.79	0.79	0.04	U
	0.1	06/12/2000	0845	0.42	0.14	0.07	0.10		0.26	U	0.65	0.91	0.06	U
	0.1	07/16/2000	0805	0.80	<0.05	0.20	0.09	<0.04	0.54	U	0.75	1.29	0.13	U
	0.1	08/15/2000	0720	0.65	<0.05	0.13	0.07		U	U	0.65	0.65	0.03	0.01
	0.1	09/11/2000	0645	0.70	<0.05	0.11	0.10		0.08	0.02	0.50	0.60	0.04	U
	Average			0.56	0.14	0.14	0.09		0.23	0.02	0.65	0.81	0.06	0.02

Station	Depth (M)	Date mm/dd/yyyy	Time hhmm	Atrazine ug/L	Alachlor ug/L	Metolachlor ug/L	Cyanazine ug/L	Acetochlor ug/L	Ammonia mg/L	NO3/NO2 mg/L	TKN mg/L	TN mg/L	T - Phos mg/L	T - Ortho-F mg/L
LB-4	0.1	06/05/1995	0950						0.13		0.50	0.63	0.10	0.06
	0.1	07/10/1995	0920						<0.02		0.80	0.80	0.08	0.02
	0.1	08/21/1995	0920						<0.02		1.10	1.10	0.14	0.02
	0.1	09/19/1995	1000						<0.02		4.50	4.50	0.03	<0.01
Average									0.13		1.73	1.86	3.58	7.16
LB-4	0.1	04/16/1996	0940	1.16	0.31	0.23	1.03		<0.02	0.20	0.50	0.70	0.04	0.01
	0.1	06/04/1996	0930	0.47	<0.05	0.18	0.59		0.08	0.40	0.70	1.18	0.26	0.05
	0.1	07/16/1996	0925	3.10	0.20	<0.05	1.50		0.04	0.50	1.00	1.54	0.14	0.01
	0.1	08/20/1996	0945	1.97	0.11	0.54	1.91		0.13	0.11	0.60	0.84	0.12	<0.01
	0.1	09/23/1996	1040	2.58	0.12	0.59	2.28		0.06	0.16	1.20	1.42	0.06	0.04
	Average			1.86	0.19	0.39	1.46		0.08	0.27	0.80	1.14	0.12	0.03
LB-4	0.1	05/01/1997	1308	0.85	<0.05	0.05	0.96		0.25	0.79	0.70	1.74	0.18	
	0.1	06/02/1997	1030	4.10	<0.05	0.80	<0.04		0.04	0.81	1.20	2.05	0.12	0.04
	0.1	07/22/1997	0910	5.80	<0.05	<0.05	3.00		0.88	0.13	1.00	2.01	0.11	0.02
	0.1	08/26/1997	0920	4.12	0.22	0.94	2.27		<0.02	0.31	1.60	1.91	0.14	0.03
	Average			3.72	0.22	0.60	2.08		0.39	0.51	1.13	1.93	0.14	0.03
LB-4	0.1	04/13/1998	1100	1.61	<0.05	0.17	0.96		0.05	0.53	1.00	1.58	0.07	0.04
	0.1	05/11/1998	0945	0.94	0.09	0.13	0.51		0.03	0.63	0.09	0.75	0.06	0.02
	0.1	06/09/1998	1100	1.56	0.11	0.44	0.71		0.10	0.72	0.70	1.52	0.07	0.06
	0.1	07/13/1998	0915	2.63	0.24	0.75	1.15		0.07	0.66	1.00	1.73	0.12	0.02
	0.1	08/10/1998	1040	2.10	0.08	0.45	0.93		0.07	0.24	0.70	1.01	0.07	0.03
	0.1	09/08/1998	1030	1.84	0.08	0.35	0.80		0.06	0.04	0.40	0.50	0.07	0.02
	Average			1.78	0.12	0.38	0.84		0.06	0.47	0.65	1.18	0.08	0.03
LB-4	0.1	04/20/1999	0915	0.27	<0.05	<0.05	0.08		0.06	0.76	0.44	1.26	0.12	0.06
	0.1	05/10/1999	1010	0.55	<0.05	0.26	0.09		U	0.90	0.32	1.22	0.10	0.06
	0.1	06/15/1999	0955	2.25	0.07	0.78	0.16		U	0.80	0.63	1.43	0.08	0.04
	0.1	07/12/1999	0825	1.99	0.06	0.92	0.20		0.10	0.61	0.69	1.40	0.08	0.03
	0.1	08/16/1999	0940	1.94	0.05	0.50	0.14		0.02	0.18	0.51	0.71	0.02	0.01
	0.1	09/14/1999	0910	1.86	<0.05	0.60	0.11		0.06	U	0.24	0.30	0.07	0.01
	Average			1.48	0.06	0.61	0.13		0.06	0.65	0.47	1.05	0.08	0.04
LB-4	0.1	04/17/2000	1300	0.16	0.09	0.29	<0.04		U	U	0.61	0.61	0.02	0.01
	0.1	05/15/2000	0930	0.52	<0.05	0.23	<0.04		0.04	U	0.57	0.61	0.02	U
	0.1	06/12/2000	1110	0.51	<0.05	0.06	0.07		0.49	U	0.89	1.38	0.06	U
	0.1	07/16/2000	0920	0.74	<0.05	0.24	0.09	<0.04	0.61	U	0.86	1.47	0.16	U
	0.1	08/15/2000	1040	0.64	<0.05	0.11	0.07		0.03	U	0.62	0.65	0.03	0.01
	0.1	09/11/2000	0900	0.77	<0.05	0.12	0.11		0.08	0.02	0.50	0.60	0.03	U
	Average			0.56	0.09	0.18	0.09		0.25	0.02	0.68	0.89	0.05	0.01

Station	Depth (M)	Date mm/dd/yyyy	Time hhmm	Atrazine ug/L	Alachlor ug/L	Metolachlor ug/L	Cyanazine ug/L	Acetochlor ug/L	Ammonia mg/L	NO3/NO2 mg/L	TKN mg/L	TN mg/L	T - Phos mg/L	T - Ortho-F mg/L
LB-4	10.0	06/05/1995	1000						0.24		0.70	0.94	0.15	0.10
	13.0	07/10/1995	0933						0.19		1.10	1.29	0.22	0.10
	9.0	08/21/1995	0929						0.62		1.80	2.42	0.65	0.23
	9.0	09/19/1995	1009						0.89		7.10	7.99	0.31	0.08
Average									0.49		2.68	3.16	0.33	0.13
LB-4	8.0	04/16/1996	0948	1.40	0.28	0.17	0.95		<0.02	0.21	0.70	0.91	0.04	0.01
	9.0	06/04/1996	0939	3.41	0.47	1.36	2.99		0.09	0.52	0.70	1.31	0.28	0.09
	9.0	07/16/1996	0934	3.28	0.24	0.86	3.25		0.31	0.17	0.50	0.98	0.14	0.07
	8.0	08/20/1996	0953	1.74	0.16	0.67	1.75		0.70	<0.01	1.80	2.50	0.29	0.10
	8.0	09/23/1996	1048	2.97	0.17	0.63	2.58		0.17	0.08	1.60	1.85	0.06	0.06
	Average			2.56	0.26	0.74	2.30		0.32	0.25	1.06	1.51	0.16	0.07
LB-4	9.0	05/01/1997	1317	1.16	0.09	0.20	1.19		0.09	0.77	0.60	1.46	0.13	
	9.0	06/02/1997	1039	1.30	0.12	0.16	1.10		0.13	0.81	1.40	2.34	0.16	0.05
	7.0	07/22/1997	0917	4.21	0.23	1.45	2.62		0.11	0.74	1.40	2.25	0.13	0.05
	8.0	08/26/1997	0928	4.29	0.12	0.90	2.20		0.39	0.12	0.80	1.31	0.24	0.08
	Average			2.74	0.14	0.68	1.78		0.18	0.61	1.05	1.84	0.17	0.06
LB-4	10.0	04/13/1998	1110	1.73	<0.05	0.18	1.10		0.05	0.51	1.00	1.56	0.09	0.04
	10.0	05/11/1998	0955	1.11	0.09	0.10	0.65		0.02	0.65	1.00	1.67	0.12	0.02
	10.0	06/09/1998	1110	1.08	<0.05	0.16	0.57		0.16	0.59	0.80	1.55	0.10	0.07
	10.0	07/13/1998	0925	1.60	0.11	0.44	0.81		<0.02	0.62	1.10	1.72	0.13	0.05
	9.0	08/10/1998	1049	0.65	0.18	0.46	0.84		0.19	0.28	1.00	1.47	0.28	0.12
	8.0	09/08/1998	1038	2.11	0.10	0.22	0.83		0.06	0.04	0.50	0.60	0.09	0.01
	Average			1.38	0.12	0.26	0.80		0.10	0.45	0.90	1.43	0.14	0.05
LB-4	10.0	04/20/1999	0925	0.28	<0.05	<0.05	0.09		U	0.79	U	0.79	0.11	0.10
	8.0	05/10/1999	1018	0.54	<0.05	0.25	0.08		U	0.89	0.36	1.25	0.10	0.06
	9.0	06/15/1999	1004	2.27	0.06	0.87	0.17		0.02	0.77	0.70	1.49	0.08	0.04
	8.0	07/12/1999	0833	1.63	0.06	0.88	0.15		0.17	0.64	0.71	1.52	0.11	0.02
	8	08/16/1999	0948	1.65	0.05	0.60	0.12		0.26	0.04	1.17	1.47	0.20	0.04
	8.0	09/14/1999	0918	2.86	<0.05	0.63	0.13		0.13	U	1.62	1.75	0.39	0.04
	Average			1.54	0.06	0.65	0.12		0.15	0.63	0.91	1.38	0.17	0.05
LB-4	7.0	04/17/2000	1307	0.43	<0.05	0.24	<0.04		U	U	0.96	0.96	0.15	0.01
	8.0	05/15/2000	0938	0.29	<0.05	0.14	<0.04		0.09	U	3.00	3.09	0.70	U
	8.0	06/12/2000	1118	0.53	0.16	0.10	<0.04		0.56	U	2.00	2.56	0.48	0.06
	8.0	07/16/2000	0928	0.75	<0.05	0.19	0.07	<0.04	0.60	U	0.97	1.57	0.53	0.02
	9.0	08/15/2000	1049	0.61	<0.05	0.08	0.06		0.58	U	3.90	4.48	1.02	0.07
	7.0	09/11/2000	0907	0.68	<0.05	0.08	0.11		0.30	U	2.00	2.30	0.40	0.04
	Average			0.55	0.16	0.14	0.08		0.43		2.14	2.49	0.55	0.04

Station	Depth (M)	Date mm/dd/yyyy	Time hhmm	Atrazine ug/L	Alachlor ug/L	Metolachlor ug/L	Cyanazine ug/L	Acetochlor ug/L	Ammonia mg/L	NO3/NO2 mg/L	TKN mg/L	TN mg/L	T - Phos mg/L	T - Ortho-F mg/L
LB-10	0.1	06/05/1995	1115						0.10		0.60	0.70	0.11	0.08
	0.1	07/10/1995	1000						<0.02		0.90	0.90	0.13	0.02
	0.1	08/21/1995	1005						0.02		1.00	1.02	0.22	0.01
	0.1	09/19/1995	1050						0.03		2.20	2.23	<0.01	<0.01
Average									0.05		1.18	1.21	0.15	0.04
LB-10	0.1	04/16/1996	1200	0.95	0.24	0.17	0.76		0.02	0.07	1.10	1.19	0.08	0.01
	0.1	06/04/1996	1110	3.18	0.44	1.32	3.26		0.08	0.36	0.70	1.14	0.25	0.05
	0.1	07/16/1996	1045	3.10	0.22	0.83	3.04		0.02	0.18	0.30	0.50	0.20	<0.01
	0.1	08/20/1996	1050	1.81	1.06	0.43	1.79		0.04	0.07	0.90	1.01	0.12	0.05
	0.1	09/23/1996	0920	2.31	0.30	0.22	1.55		0.03	<0.01	3.40	3.43	0.28	0.07
	Average			2.27	0.45	0.59	2.08		0.04	0.17	1.28	1.45	0.19	0.05
LB-10	0.1	05/01/1997	1440	0.73	0.14	0.06	0.77		0.05	0.86	1.40	2.31	0.18	
	0.1	06/02/1997	1105	11.04	0.25	2.91	5.64		0.40	1.20	1.60	3.20	0.10	0.06
	0.1	07/22/1997	1030	4.98	0.22	1.35	2.20		0.09	0.28	1.80	2.17	0.05	0.03
	0.1	08/26/1997	1100	4.22	0.46	0.75	2.15		<0.02	0.14	0.60	0.74	0.15	0.04
	Average			5.24	0.27	1.27	2.69		0.18	0.62	1.35	2.11	0.12	0.04
LB-10	0.1	04/13/1998	1000	0.30	<0.05	0.06	0.09		0.20	0.58	1.90	2.68	0.19	0.08
	0.1	05/11/1998	1010	1.49	0.07	0.55	0.67		0.05	0.63	1.10	1.78	0.10	0.02
	0.1	06/09/1998	0950	4.49	0.22	1.25	1.61		0.24	0.62	1.20	2.06	0.08	0.06
	0.1	07/13/1998	1005	2.75	0.30	0.86	1.22		0.05	0.51	1.50	2.06	0.15	0.02
	0.1	08/10/1998	0945	1.77	0.15	0.35	0.86		<0.02	0.07	1.00	1.07	0.11	0.04
	0.1	09/08/1998	0930	1.97	0.08	0.28	0.71		0.11	0.04	0.70	0.85	0.17	0.02
	Average			2.13	0.16	0.56	0.86		0.13	0.41	1.23	1.75	0.13	0.04
LB-10	0.1	04/20/1999	0945	0.36	<0.05	0.19	0.08		U	0.74	0.63	1.37	0.10	0.01
	0.1	05/10/1999	1040	2.50	0.05	1.43	0.16		0.08	0.95	0.69	1.72	0.14	0.06
	0.1	06/15/1999	1050	2.74	0.07	1.11	0.22		U	0.63	0.86	1.49	0.09	0.03
	0.1	07/12/1999	0925	2.97	0.09	1.03	0.37		0.29	0.08	2.32	2.69	0.37	0.07
	0.1	08/16/1999	1045	1.96	<0.05	0.44	0.14		0.05	0.01	0.98	1.04	0.09	0.01
	0.1	09/14/1999	0940	1.86	<0.05	0.49	0.10		0.04	U	0.87	0.91	0.13	0.03
	Average			2.07	0.07	0.78	0.18		0.12	0.48	1.06	1.54	0.15	0.04
LB-10	0.1	04/17/2000	1415	0.37	0.08	0.22	<0.04		U	U	1.30	1.30	0.18	0.02
	0.1	05/15/2000	1040	0.60	0.11	<0.05	0.19		U	U	0.92	0.92	0.07	U
	0.1	06/12/2000	1020	0.54	<0.05	<0.05	<0.04		0.35	U	1.00	1.35	0.16	0.02
	0.1	07/16/2000	1015	0.91	<0.05	0.27	0.11	<0.04	0.64	U	1.07	1.71	0.18	0.02
	0.1	08/15/2000	0955	0.67	<0.05	0.10	0.07		0.03	U	1.00	1.03	0.11	0.03
	0.1	09/11/2000	1010	0.72	<0.05	0.12	0.11		U	U	0.70	0.70	0.07	0.01
	Average			0.63	0.10	0.18	0.12		0.34		1.00	1.17	0.13	0.02

Station	Depth (M)	Date mm/dd/yyyy	Time hhmm	Atrazine ug/L	Alachlor ug/L	Metolachlor ug/L	Cyanazine ug/L	Acetochlor ug/L	Ammonia mg/L	NO3/NO2 mg/L	TKN mg/L	TN mg/L	T - Phos mg/L	T - Ortho-F mg/L
LB-10	6.0	06/05/1995	1121						0.21		0.70	0.91	0.22	0.16
	5.0	07/10/1995	1005						0.22		1.70	1.92	0.47	0.29
	4.0	08/21/1995	1009						0.43		1.50	1.93	0.49	0.08
	4.0	09/19/1995	1054						0.06		3.90	3.96	0.04	<0.01
Average									0.23		1.95	2.18	0.31	0.18
LB-10	5.0	04/16/1996	1205	0.88	0.25	0.13	0.76		0.02	0.06	1.00	1.08	0.08	0.01
	5.0	06/04/1996	1115	3.89	0.35	0.94	3.96		0.35	0.58	0.90	1.83	0.48	0.09
	5.0	07/16/1996	1050	2.90	0.34	0.74	2.29		1.24	<0.01	1.30	2.54	0.35	0.13
	4.0	08/20/1996	1054	2.09	1.46	2.00	1.56		0.23	0.08	1.30	1.61	0.30	0.07
	2.0	09/23/1996	0922	2.70	0.24	1.34	1.63		0.03	<0.01	4.50	4.53	0.58	0.09
Average				2.49	0.53	1.03	2.04		0.37	0.24	1.80	2.32	0.36	0.08
LB-10	5.5	05/01/1997	1446	0.70	0.22	0.11	0.22		0.16	1.05	0.90	2.11	0.13	
	4.0	06/02/1997	1109	13.04	0.19	2.97	5.64		0.30	1.24	1.60	3.14	0.11	0.07
	4.0	07/22/1997	1034	4.43	0.21	1.42	2.48		0.22	0.45	1.40	2.07	0.13	0.05
	3.0	08/26/1997	1103						0.12	0.05	1.40	1.57	0.11	0.04
Average				6.06	0.21	1.50	2.78		0.20	0.70	1.33	2.22	0.12	0.05
LB-10	4.0	04/13/1998	1004	0.16	<0.05	0.11	0.10		0.20	0.58	2.20	2.98	0.25	0.09
	5.0	05/11/1998	1015	0.77	0.06	0.17	0.41		0.24	0.48	4.50	5.22	1.83	0.02
	5.0	06/09/1998	0955	3.85	0.09	1.27	1.50		0.03	0.73	1.40	2.16	0.24	0.08
	5.0	07/13/1998	1010	2.02	0.21	0.63	0.68		0.11	0.29	1.50	1.90	0.35	0.04
	5.0	08/10/1998	0950	1.63	0.14	0.36	0.78		0.46	0.09	2.30	2.85	0.52	0.17
	4.0	09/08/1998	0934	1.92	0.07	0.26	0.76		0.17	0.04	0.60	0.81	0.12	0.06
Average				1.73	0.11	0.47	0.71		0.20	0.37	2.08	2.65	0.55	0.08
LB-10	5.0	04/20/1999	0950	2.57	0.10	1.54	0.16		0.33	2.66	1.76	4.75	0.25	0.08
	5.0	05/10/1999	1045	10.90	0.14	3.55	0.25		0.13	0.81	0.95	1.89	0.23	0.08
	4.0	06/15/1999	1054	2.81	0.09	1.01	0.22		U	0.68	0.72	1.40	0.11	0.04
	4.0	07/12/1999	0929	3.45	0.08	1.03	0.35		0.24	0.01	2.57	2.82	0.47	0.12
	4	08/16/1999	1049	1.83	<0.05	0.40	0.12		0.07	0.02	1.24	1.33	0.25	0.05
	3.0	09/14/1999	0943	1.93	<0.05	0.56	<0.04		0.15	U	2.24	2.39	0.58	0.08
Average				3.92	0.10	1.35	0.22		0.18	0.84	1.58	2.43	0.32	0.08
LB-10	3.0	04/17/2000	1418	0.44	0.11	0.30	<0.04		0.04	U	1.63	1.67	0.30	0.02
	3.0	05/15/2000	1043	0.42	<0.05	0.12	<0.04		0.11	0.12	2.00	2.23	0.54	U
	4.0	06/12/2000	1024	0.48	<0.05	<0.05	<0.04		0.36	U	4.00	4.36	1.00	0.04
	3.0	07/16/2000	1018	0.87	<0.05	0.28	0.09	<0.04	0.66	U	1.09	1.75	0.17	0.02
	3.0	08/15/2000	0958	0.69	<0.05	0.09	0.07		0.08	U	1.00	1.08	0.16	0.04
	3.0	09/11/2000	1013	0.77	<0.05	0.10	0.12		0.03	U	1.00	1.03	0.20	0.02
Average				0.61	0.11	0.18	0.09		0.21	0.12	1.79	2.02	0.40	0.03

Station	Depth (M)	Date mm/dd/yyyy	Time hhmm	Atrazine ug/L	Alachlor ug/L	Metolachlor ug/L	Cyanazine ug/L	Acetochlor ug/L	Ammonia mg/L	NO3/NO2 mg/L	TKN mg/L	TN mg/L	T - Phos mg/L	T - Ortho-F mg/L
LB-11	0.1	06/05/1995	1030						0.14		0.80	0.94	0.17	0.09
	0.1	07/10/1995	1030						0.05		1.20	1.25	0.19	0.09
	0.1	08/21/1995	1035						<0.02		1.20	1.20	0.23	0.02
	0.1	09/19/1995	1020						0.02		4.30	4.32	0.06	<0.01
Average									0.07		1.88	1.93	0.16	0.07
LB-11	0.1	04/16/1996	1100	0.53	0.18	0.08	0.49		<0.02	0.13	0.90	1.03	0.08	0.01
	0.1	06/04/1996	1030	3.44	0.42	1.76	3.26		0.11	0.46	0.70	1.27	0.29	0.08
	0.1	07/16/1996	1010	3.27	0.18	0.68	2.72		0.09	0.49	0.40	0.98	0.12	<0.01
	0.1	08/20/1996	1020	1.47	0.30	1.11	1.42		0.13	0.05	0.60	0.78	0.38	0.05
	0.1	09/23/1996	0950	3.90	1.20	0.40	0.70		0.06	0.42	1.80	2.28	0.13	0.04
Average				2.52	0.46	0.81	1.72		0.10	0.31	0.88	1.27	0.20	0.05
LB-11	0.1	05/01/1997	1558	0.40	<0.05	0.50	<0.04		0.10	1.01	1.20	2.31	0.03	
	0.1	06/02/1997	1200	14.28	0.50	3.04	2.68		0.34	1.08	1.90	3.32	0.11	0.09
	0.1	07/22/1997	0950	7.70	0.49	1.43	3.70		0.16	0.41	1.90	2.47	0.05	0.03
	0.1	08/26/1997	1010	4.93	0.18	0.66	2.18		0.02	0.15	0.60	0.77	0.05	0.04
Average				6.83	0.39	1.41	2.85		0.16	0.66	1.40	2.22	0.06	0.05
LB-11	0.1	04/13/1998	0942	0.15	<0.05	0.07	0.09		0.18	0.53	1.40	2.11	0.15	0.05
	0.1	05/11/1998	1035	3.65	0.22	1.66	1.60		0.04	0.46	1.30	1.80	0.10	0.01
	0.1	06/09/1998	1025	3.52	0.15	1.10	1.42		0.16	0.73	0.90	1.79	0.07	0.05
	0.1	07/13/1998	0940	2.66	0.42	0.79	1.17		0.04	0.63	1.60	2.27	0.15	0.03
	0.1	08/10/1998	1015	1.71	0.16	0.42	0.80		0.03	0.03	1.00	1.06	0.09	0.04
	0.1	09/08/1998	1000	1.92	0.07	0.35	0.78		0.09	0.04	0.70	0.83	0.21	0.05
Average				2.27	0.20	0.73	0.98		0.09	0.40	1.15	1.64	0.13	0.04
LB-11	0.1	04/20/1999	1015	0.33	<0.05	0.19	0.05		0.06	0.76	1.19	2.01	0.16	0.03
	0.1	05/10/1999	1155	1.80	<0.05	0.98	0.10		0.01	0.65	1.42	2.08	0.16	0.07
	0.1	06/15/1999	1020	2.79	0.09	0.99	0.20		0.04	0.88	0.88	1.80	0.14	0.08
	0.1	07/12/1999	0905	2.21	0.09	0.83	0.14		0.03	0.42	1.00	1.45	0.15	0.05
	0.1	08/16/1999	1010	2.22	<0.05	0.43	0.14		0.02	U	1.06	1.08	0.11	0.03
	0.1	09/14/1999	1020	1.99	<0.05	0.52	0.12		0.03	U	1.02	1.05	0.17	0.05
Average				1.89	0.09	0.66	0.13		0.03	0.68	1.10	1.58	0.15	0.05
LB-11	0.1	04/17/2000	1341	0.41	0.11	0.26	<0.04		U	U	1.42	1.42	0.15	U
	0.1	05/15/2000	1000	0.42	<0.05	0.20	<0.04		U	U	0.90	0.90	0.16	U
	0.1	06/12/2000	0940	0.55	0.05	0.09	0.09		0.48	U	1.00	1.48	0.19	0.02
	0.1	07/16/2000	0945	0.79	<0.05	0.23	0.10	<0.04	0.60	U	1.46	2.06	0.21	0.02
	0.1	08/15/2000	1020	0.63	<0.05	0.07	0.06		0.09	U	1.10	1.19	0.17	0.04
	0.1	09/11/2000	0940	0.67	<0.05	0.09	0.10		0.10	U	1.10	1.20	0.10	0.03
Average				0.58	0.08	0.16	0.09		0.32		1.16	1.38	0.16	0.03

Station	Depth (M)	Date mm/dd/yyyy	Time hhmm	Atrazine ug/L	Alachlor ug/L	Metolachlor ug/L	Cyanazine ug/L	Acetochlor ug/L	Ammonia mg/L	NO3/NO2 mg/L	TKN mg/L	TN mg/L	T - Phos mg/L	T - Ortho-F mg/L
LB-11	7.0	06/05/1995	1037						0.33	0.80	1.13	0.19	0.15	
	4.0	07/10/1995	1034						0.23	1.50	1.73	0.36	0.23	
	6.0	08/21/1995	1041						1.26	2.60	3.86	0.79	0.90	
	5.0	09/19/1995	1025						0.04	1.80	1.84	0.07	<0.01	
Average									0.47	1.68	2.14	0.35	0.43	
LB-11	5.0	04/16/1996	1105	0.57	0.14	0.14	0.47		<0.02	1.70	1.70	0.10	0.01	
	4.0	06/04/1996	1034	0.19	<0.05	<0.05	0.10		0.19	0.39	0.80	1.38	0.32	
	5.0	07/16/1996	1015	2.66	0.29	0.77	2.28		0.31	0.17	0.60	1.08	0.23	
	3.0	08/20/1996	1023	1.38	0.11	0.33	1.25		0.12	0.04	1.10	1.26	0.32	
	5.0	09/23/1996	0955	1.94	0.16	0.41	1.72		0.11	0.08		0.19	0.91	
Average				1.35	0.18	0.41	1.16		0.18	0.17	1.05	1.12	0.38	
LB-11	5.0	05/01/1997	1603	0.69	<0.05	0.05	0.97		0.12	0.96	1.40	2.48	0.10	
	6.0	06/02/1997	1206	13.12	0.86	2.92	8.92		0.39	1.03	2.30	3.72	0.21	
	5.0	07/22/1997	0955	6.50	0.54	1.35	3.30		0.43	0.22	3.30	3.95	0.27	
	3.0	08/26/1997	1013	4.37	0.27	0.62	2.18		0.05	0.18	0.90	1.13	0.30	
Average				6.17	0.56	1.24	3.84		0.25	0.60	1.98	2.82	0.22	
LB-11	6.0	04/13/1998	0948	0.09	<0.05	0.05	<0.04		0.20	0.45	2.10	2.75	0.25	
	5.0	05/11/1998	1040	0.81	0.09	0.25	0.44		0.06	0.61	1.20	1.87	0.15	
	5.0	06/09/1998	1030	3.38	0.07	1.07	1.36		0.17	0.74	1.40	2.31	0.19	
	6.0	07/13/1998	0946	1.19	0.23	0.31	0.34		0.90	0.06	3.30	4.26	0.96	
	5.0	08/10/1998	1020	1.54	0.26	0.42	0.95		0.42	0.10	1.70	2.22	0.61	
	4.0	09/08/1998	1004	2.20	0.08	0.29	0.79		0.09	0.04	0.50	0.63	0.09	
Average				1.54	0.15	0.40	0.78		0.31	0.33	1.70	2.34	0.38	
LB-11	4.0	04/20/1999	1019	1.54	<0.05	1.06	0.09		0.20	1.35	1.62	3.17	0.30	
	5.0	05/10/1999	1200						0.18	0.38	2.00	2.56	0.54	
	4.0	06/15/1999	1024	2.17	0.06	0.87	0.17		0.10	0.70	1.15	1.95	0.23	
	4.0	07/12/1999	0909	2.12	0.07	0.70	0.17		0.06	0.48	1.59	2.13	0.37	
	4	08/16/1999	1014	2.24	<0.05	0.40	0.15		0.23	0.11	1.09	1.43	0.17	
	3.0	09/14/1999	1023	2.04	0.05	0.52	0.13		U	U	1.55	1.55	0.40	
Average				2.02	0.06	0.71	0.14		0.15	0.60	1.50	2.13	0.34	
LB-11	4.0	04/17/2000	1345	0.37	0.06	0.11	<0.04		U	U	1.57	1.57	0.30	
	4.0	05/15/2000	1004	0.37	0.09	0.05	<0.04		0.03	U	3.00	3.03	0.70	
	5.0	06/12/2000	0945	1.06	<0.05	0.12	0.06		0.53	U	4.00	4.53	1.00	
	4.0	07/16/2000	0949	0.74	<0.05	0.21	0.08	<0.04	0.72	U	2.61	3.33	0.54	
	3.0	08/15/2000	1023	0.61	<0.05	0.08	0.07		0.08	U	1.00	1.08	0.24	
	4.0	09/11/2000	0944	0.64	<0.05	0.08	0.11		0.08	U	0.97	1.05	0.30	
Average				0.63	0.08	0.11	0.08		0.29		2.19	2.43	0.51	

Station	Depth (M)	Date mm/dd/yyyy	Time hhmm	Atrazine ug/L	Alachlor ug/L	Metolachlor ug/L	Cyanazine ug/L	Acetochlor ug/L	Ammonia mg/L	NO3/NO2 mg/L	TKN mg/L	TN mg/L	T - Phos mg/L	T - Ortho-F mg/L
LB-18	0.1	06/05/1995	0700						0.15		0.90	1.05	0.19	0.13
	0.1	07/10/1995	0700						0.09		1.40	1.49	0.29	0.13
	0.1	08/20/1995	1545						0.03		1.30	1.33	0.43	0.12
	0.1	09/18/1995	1800						2.30		9.90	12.20	0.45	0.01
Average									0.64		3.38	4.02	0.34	0.10
LB-18	0.1	04/16/1996	1530	0.60	0.18	0.14	0.47		0.73	0.06	4.80	5.59	0.47	0.04
	0.1	06/04/1996	0800	5.83	0.73	1.09	4.06		0.25	1.91	1.10	3.26	0.36	0.10
	0.1	07/15/1996	1500	7.19	0.23	0.30	2.32		6.73	1.85	6.70	15.28	1.35	0.90
	0.1	08/20/1996	0700	1.65	1.10	1.30	1.63		0.34	0.89	1.80	3.03	0.61	0.31
	0.1	09/23/1996	0730	1.66	0.18	0.19	0.88		3.10	0.10		3.20	0.29	0.81
Average				3.39	0.48	0.60	1.87		2.23	0.96	3.60	6.07	0.62	0.43
LB-18	0.1	05/02/1997	0850	0.19	0.17	<0.05	0.08		0.28	0.17	2.40	2.85	0.15	
	0.1	06/02/1997	0835	23.00	0.41	4.00	7.55		0.38	4.61	1.90	6.89	0.15	0.11
	0.1	07/22/1997	0745	3.76	0.47	0.96	1.29		1.46	0.23	3.70	5.39	0.26	0.16
	0.1	08/26/1997	0745	3.09	0.33	0.27	1.34		0.11	0.29	1.10	1.50	0.16	0.09
Average				7.51	0.35	1.74	2.57		0.56	1.33	2.28	4.16	0.18	0.12
LB-18	0.1	04/13/1998	0850	0.09	<0.05	<0.05	0.03		0.27	0.52	3.30	4.09	0.30	0.08
	0.1	05/11/1998	0800	3.76	0.14	1.07	1.70		0.06	0.51	1.10	1.67	0.09	0.02
	0.1	06/09/1998	0815	6.10	5.00	1.73	0.92		0.17	2.86	2.70	5.73	0.41	0.16
	0.1	07/13/1998	0805	0.70	0.21	0.17	0.16		0.04	0.14	1.40	1.58	0.21	0.04
	0.1	08/10/1998	0800	0.30	0.22	<0.05	0.07		0.03	0.09	0.70	0.82	0.14	0.06
	0.1	09/08/1998	0820	0.27	0.07	<0.05	0.06		0.07	0.08	0.50	0.65	0.29	0.10
Average				1.87	1.13	0.99	0.49		0.11	0.70	1.62	2.42	0.24	0.08
LB-18	0.1	04/20/1999	0830	0.31	<0.05	0.10	0.07		U	0.71	0.70	1.41	0.25	0.03
	0.1	05/10/1999	0855	4.93	0.14	2.38	0.23		0.04	1.26	0.72	2.02	0.19	0.07
	0.1	06/15/1999	0815	4.05	0.09	1.30	0.33		0.15	0.48	1.58	2.21	0.27	0.07
	0.1	07/12/1999	1000	1.96	0.23	1.86	0.33		U	0.06	1.72	1.78	0.33	0.05
	0.1	08/16/1999	0835	2.31	<0.05	0.34	0.15		U	0.02	2.13	2.15	0.33	0.05
	0.1	09/14/1999	0740	2.63	0.18	1.64	0.50		0.10	U	1.77	1.87	0.21	0.03
Average				2.70	0.16	1.27	0.27		0.10	0.51	1.44	1.91	0.26	0.05
LB-18	0.1	04/17/2000	1525	0.53	0.23	0.76	0.22		0.23	0.24	2.32	2.79	0.46	0.25
	0.1	05/15/2000	1015	0.62	0.09	<0.05	0.14		1.01	U	3.00	4.01	0.55	0.42
	0.1	06/12/2000	1200	1.07	0.11	<0.05	0.10		2.00	0.17	4.00	6.17	0.42	0.23
	0.1	07/16/2000	1120	1.06	0.06	0.63	0.11	<0.04	1.04	0.40	2.48	3.92	0.35	0.13
	0.1	08/15/2000	0820	8.60	0.59	3.79	1.07		0.51	1.00	1.00	2.51	0.27	0.15
	0.1	09/11/2000	0720	1.07	<0.05	0.29	0.11		0.90	0.40	2.90	4.20	0.30	0.10
Average				2.16	0.22	1.37	0.29		0.95	0.44	2.62	3.93	0.39	0.21

Station	Depth (M)	Date mm/dd/yyyy	Time hhmm	Atrazine ug/L	Alachlor ug/L	Metolachlor ug/L	Cyanazine ug/L	Acetochlor ug/L	Ammonia mg/L	NO3/NO2 mg/L	TKN mg/L	TN mg/L	T - Phos mg/L	T - Ortho-F mg/L
LB-19	0.1	06/05/1995	0740						0.09		0.90	0.99	0.20	0.09
	0.1	07/10/1995	0720						0.08		1.20	1.28	0.26	0.14
	0.1	08/20/1995	1515						0.06		1.40	1.46	0.36	0.06
	0.1	09/18/1995	1735						<0.02		2.20	2.20	0.12	0.08
Average									0.08		1.43	1.48	0.24	0.09
LB-19	0.1	04/16/1996	1545	0.29	0.05	<0.05	0.18		<0.02	<0.01	0.70	0.70	0.07	0.02
	0.1	06/04/1996	0730	1.41	0.19	0.30	1.40		0.12	0.16	0.90	1.18	0.28	0.06
	0.1	07/15/1996	1515	1.23	0.30	0.21	0.84		0.07	0.10	0.80	0.97	0.17	<0.01
	0.1	08/20/1996	0720	0.10	0.11	<0.05	0.04		0.09	0.31	2.00	2.40	0.51	0.09
	0.1	09/23/1996	0800	0.17	0.13	<0.05	0.05		0.02	2.58	2.00	4.60	0.16	0.02
	Average			0.64	0.16	0.26	0.50		0.08	0.79	1.28	1.97	0.24	0.05
LB-19	0.1	05/02/1997	0925	0.09	<0.05	<0.05	<0.04		0.07	0.01	0.40	0.48	0.06	
	0.1	06/02/1997	0820	17.00	0.57	2.62	2.07		0.10	1.97	1.30	3.37	0.08	0.07
	0.1	07/22/1997	0800	4.01	0.25	0.48	1.25		0.13	0.16	1.60	1.89	0.06	0.04
	0.1	08/26/1997	0730	1.79	0.10	0.07	0.42		<0.02	0.05	1.20	1.25	0.06	0.03
	Average			5.72	0.31	1.06	1.25		0.10	0.55	1.13	1.75	0.07	0.05
LB-19	0.1	04/13/1998	0910	<0.05	<0.05	<0.05	<0.04		0.11	0.28	1.70	2.09	0.20	0.05
	0.1	05/11/1998	0820	4.83	0.30	0.61	0.66		0.11	1.41	1.10	2.62	0.13	0.04
	0.1	06/09/1998	0830	42.90	2.53	11.70	12.10		0.51	5.84	3.60	9.95	0.66	0.25
	0.1	07/13/1998	0820	0.62	0.12	0.15	0.13		0.05	0.12	1.10	1.27	0.21	0.03
	0.1	08/10/1998	0810	0.68	0.07	0.19	0.19		0.04	0.07	0.80	0.91	0.14	0.10
	0.1	09/08/1998	0815	0.76	0.13	0.14	0.19		0.07	0.20	0.60	0.87	0.11	0.03
	Average			9.96	0.63	2.56	2.65		0.15	1.32	1.48	2.95	0.24	0.08
LB-19	0.1	04/20/1999	0800	0.32	<0.05	0.15	0.07		U	0.74	0.71	1.45	0.23	0.03
	0.1	05/10/1999	0835	0.94	<0.05	0.41	0.07		U	0.22	0.35	0.57	0.13	0.06
	0.1	06/15/1999	0750	14.90	0.20	1.39	0.26		0.12	1.82	2.82	4.76	0.62	0.04
	0.1	07/12/1999	0950	2.92	0.09	0.46	0.13		U	U	1.27	1.27	0.12	0.02
	0.1	08/16/1999	0810	1.42	0.07	0.12	0.11		0.09	0.04	1.30	1.43	0.15	0.01
	0.1	09/14/1999	0755	1.00	0.05	<0.05	0.08		U	U	1.38	1.38	0.20	0.04
	Average			3.58	0.10	0.51	0.12		0.11	0.71	1.31	1.81	0.24	0.03
LB-19	0.1	04/17/2000	1600	1.07	0.16	0.54	0.11		0.25	0.24	2.00	2.49	0.30	0.25
	0.1	05/15/2000	0940	0.19	0.06	0.05	<0.04		0.24	U	1.00	1.24	0.08	0.01
	0.1	06/12/2000	1136	0.07	<0.05	<0.05	<0.04		0.18	U	0.97	1.15	0.10	0.02
	0.1	07/16/2000	1130	1.06	0.08	0.49	0.08	<0.04	1.23	0.07	2.10	3.40	0.42	0.02
	0.1	08/15/2000	0835	0.18	<0.05	0.07	<0.04		0.15	0.23	1.00	1.38	0.18	0.06
	0.1	09/11/2000	0745	0.25	<0.05	0.11	0.06		0.08	U	1.10	1.18	0.20	0.10
	Average			0.47	0.10	0.25	0.08		0.36	0.18	1.36	1.81	0.21	0.08